

# AN INEQUALITY FOR CONTINUOUS LINEAR FUNCTIONALS

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ABSTRACT. Let  $n$  be an integer,  $n > 1$ .

**Theorem.** *If  $A: C[a, b] \rightarrow \mathbb{R}$  is a continuous linear functional orthogonal to all polynomials of degree at most  $n - 1$ , then the the inequalities*

$$A^2(f) \leq \frac{(-1)^k}{(2k-1)!} A_s (A_t ((t-s)_+^{2k-1})) \|f^{(k)}\|_2^2,$$

are satisfied for all  $f \in C^n[a, b]$  and  $k = 2, \dots, n$ .

The previous theorem generalizes results contained in the following papers:

## REFERENCES

- [1] I. GAVREA AND M. IVAN, *An inequality for two-dimensional divided differences*, Automat. Comput. Appl. Math., **4**, 2, (1996), 100–103.
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- [3] V. A. ZMOROVICH AND N. I. CHERNEĬ, *Some integral inequalities (Russian)*, Dokl. Akad. Nauk Ukrain. SSR Ser. A, **6**, (1983), 13–16.
- [4] V. A. ZMOROVICH, *On some inequalities (Russian)*, Izv. Polytehn. Inst. Kiev, **19**, (1956), 92–107.